

## ABSTRACT

A multi-mode wireless device on a single substrate includes an analog portion and a digital portion integrated on the single substrate. The analog portion includes a cellular radio core; and a short-range wireless transceiver core. The digital portion includes a multi-processor core with a master processor coupled to a router which distributes data from the radio chip to a serial-parallel array of DSP processors, each of which is connected to multiple DSP coprocessors. This arrangement allows for decoding both complex protocols at low data rates (like GPRS), simple protocols at high data rates (like 802.11A) and complex protocols at high data rates (like WCDMA), using the same hardware.